

Dental Anatomy lec 14

Permanent Mandibular 1st Molar



Before we start..



Permanent Teeth

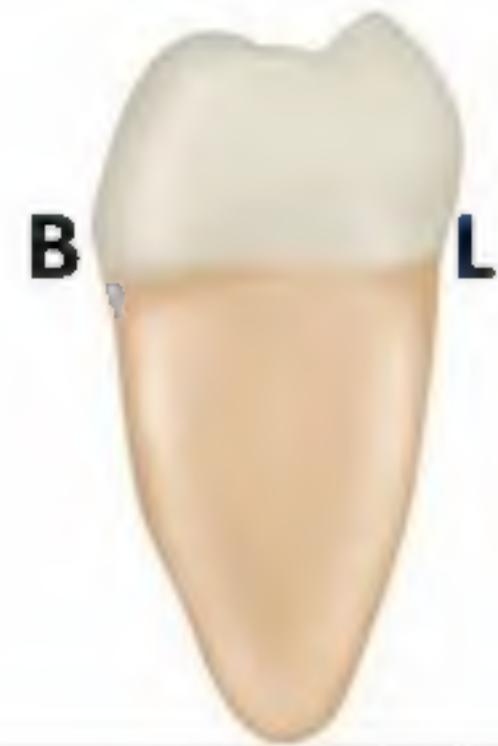
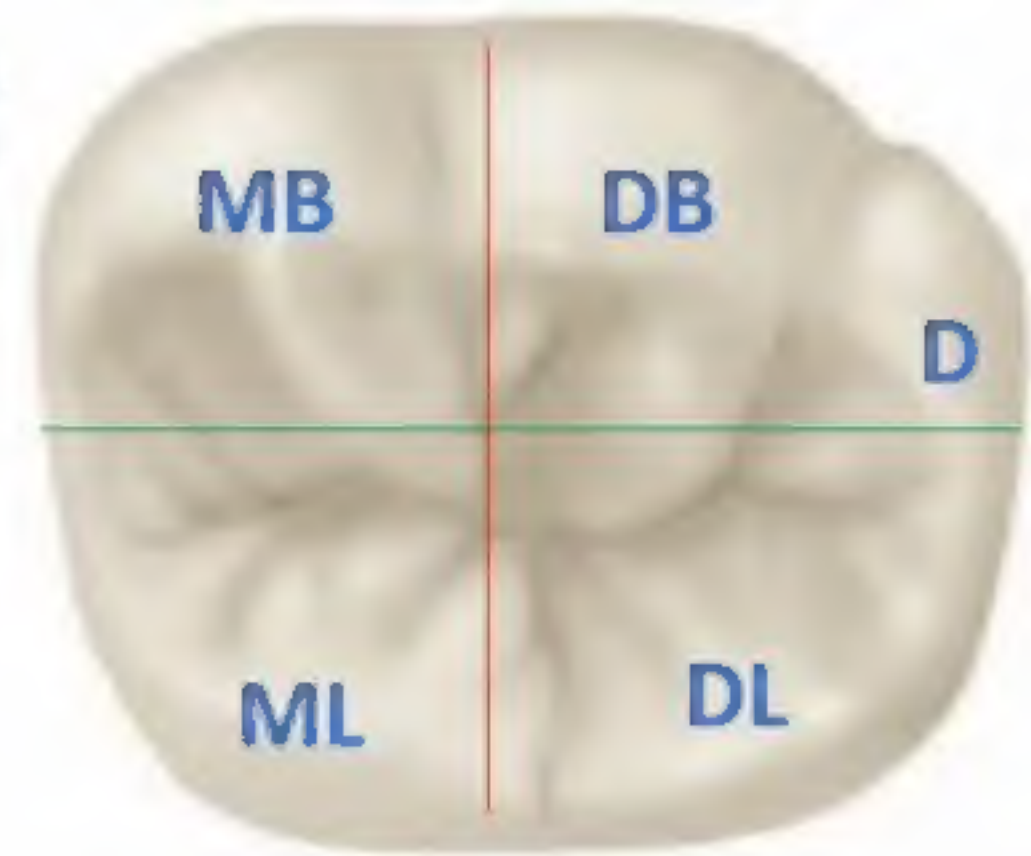
Upper Teeth		Erupt
Central incisor		7-8 yrs.
Lateral incisor		8-9 yrs.
Canine (cuspid)		11-12 yrs.
First premolar (first bicuspid)		10-11 yrs.
Second premolar (second bicuspid)		10-12 yrs.
First molar		6-7 yrs.
Second molar		12-13 yrs.
Third molar (wisdom tooth)		17-21 yrs.
Lower Teeth		Erupt
Third molar (wisdom tooth)		17-21 yrs.
Second molar		11-13 yrs.
First molar		6-7 yrs.
Second premolar (2nd bicuspid)		11-12 yrs.
First premolar (first bicuspid)		10-12 yrs.
Canine (cuspid)		9-10 yrs.
Lateral incisor		7-8 yrs.
Central incisor		6-7 yrs.



Mandibular First Molar

Principal Identifying Features

- 1) **Five cusps**: two buccal, two lingual and one distal.
- 2) The **buccal surface** is inclined lingually, with the presence of two buccal developmental grooves.
- 3) The crown is **wider mesio-distally** than bucco-lingually.
- 4) The occlusal surface is **rectangular** in shape.
- 5) There are two well developed roots: one mesial and one distal.

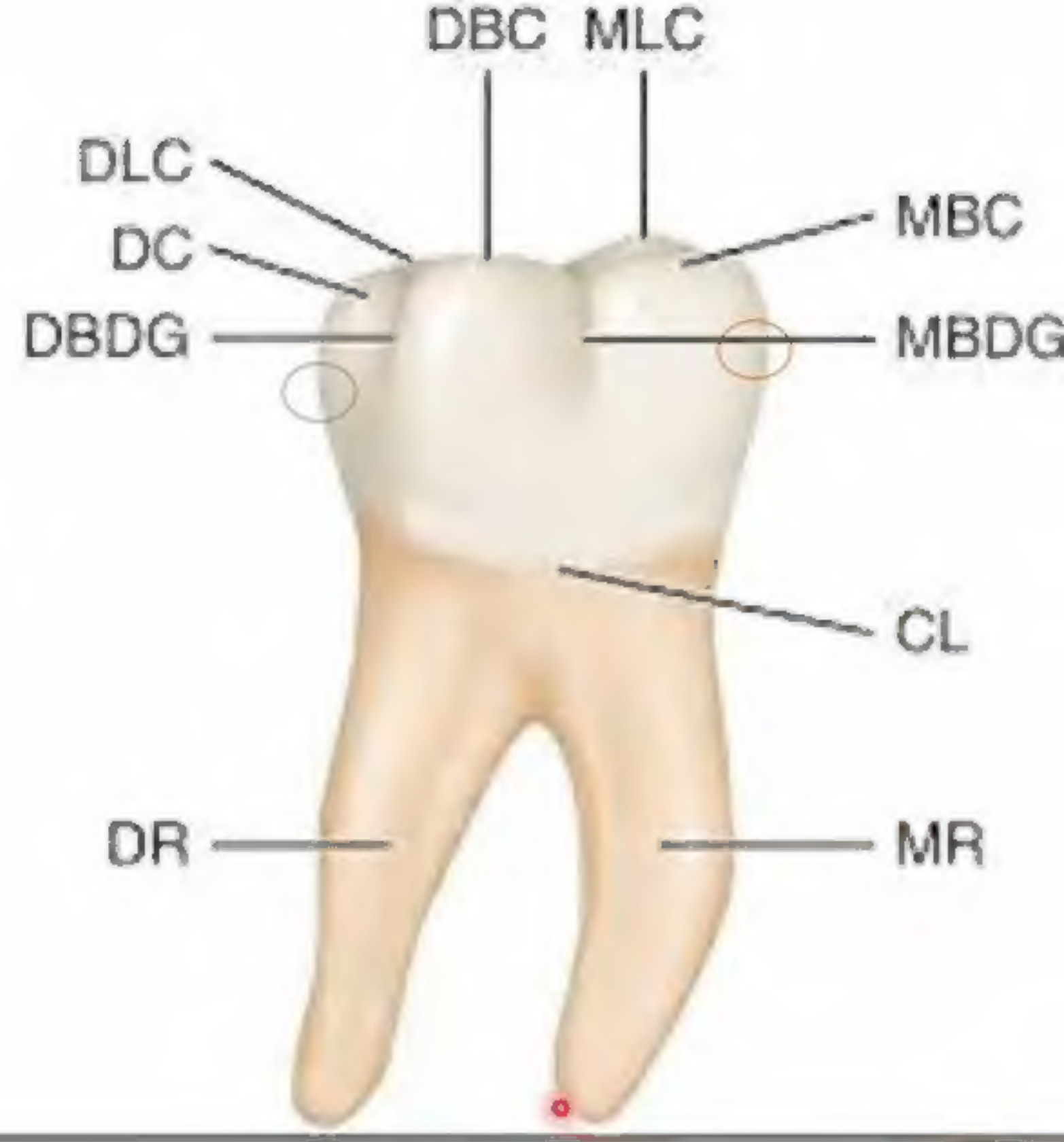


Buccal Aspect

1) The **mesial contact area** is at the junction between the occlusal and middle thirds.

2) The distal contact area is a little lower than the mesial contact area.

3) The cervical line is curving regularly apically.



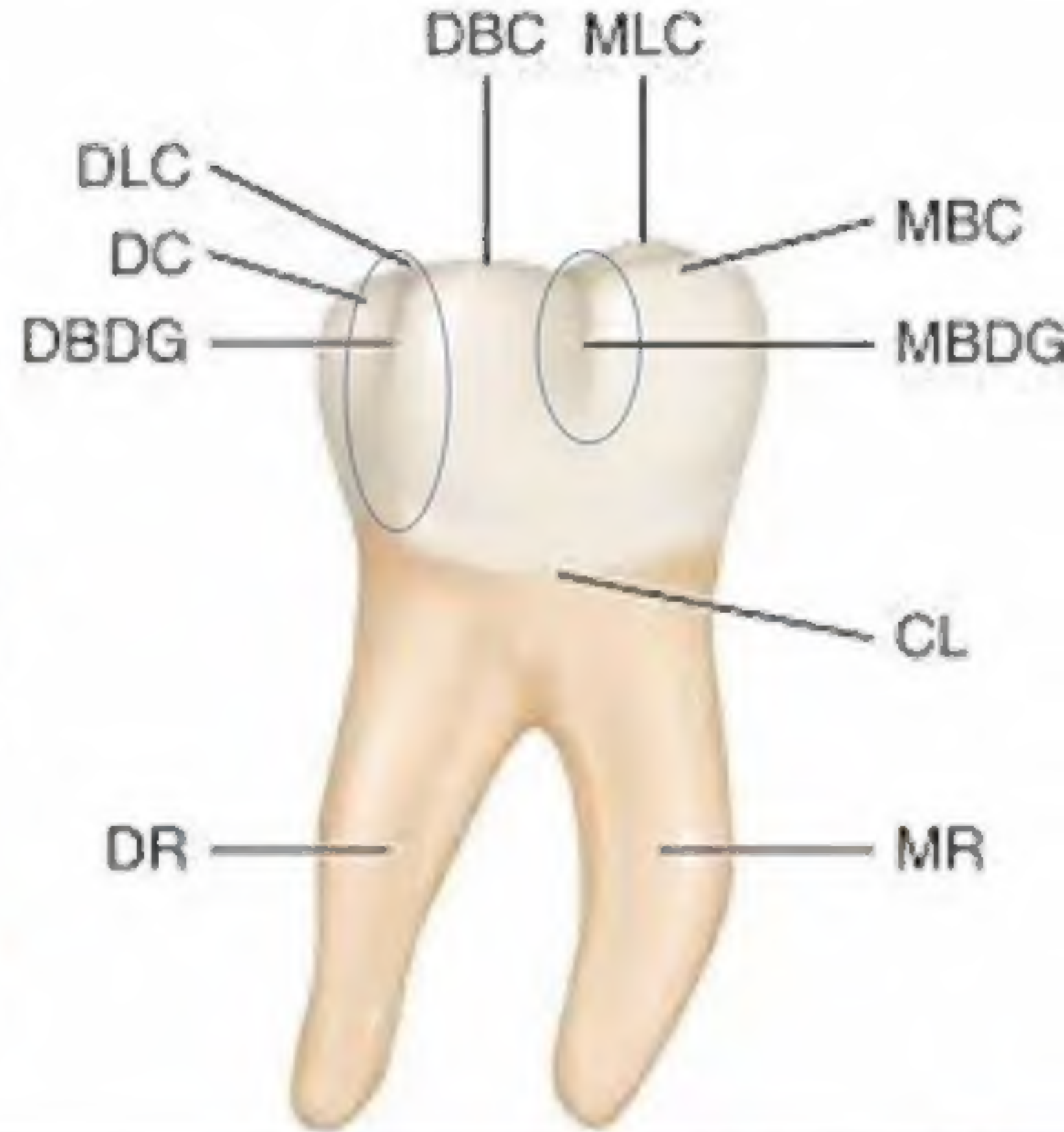
Buccal Aspect

4) There are 2 buccal developmental grooves acting as lines of division between the cusps:

(a) The **mesio-buccal developmental groove**: separating between the mesiobuccal cusp and distobuccal cusp.

(b) The **disto-buccal developmental groove**: separating between the distobuccal cusp and distal cusp. The mesiobuccal developmental groove is shorter than the distobuccal one.

5) The **mesio-buccal, distobuccal and distal cusps** are clearly visible, and the mesio-lingual and distolingual cusps tips can be seen.

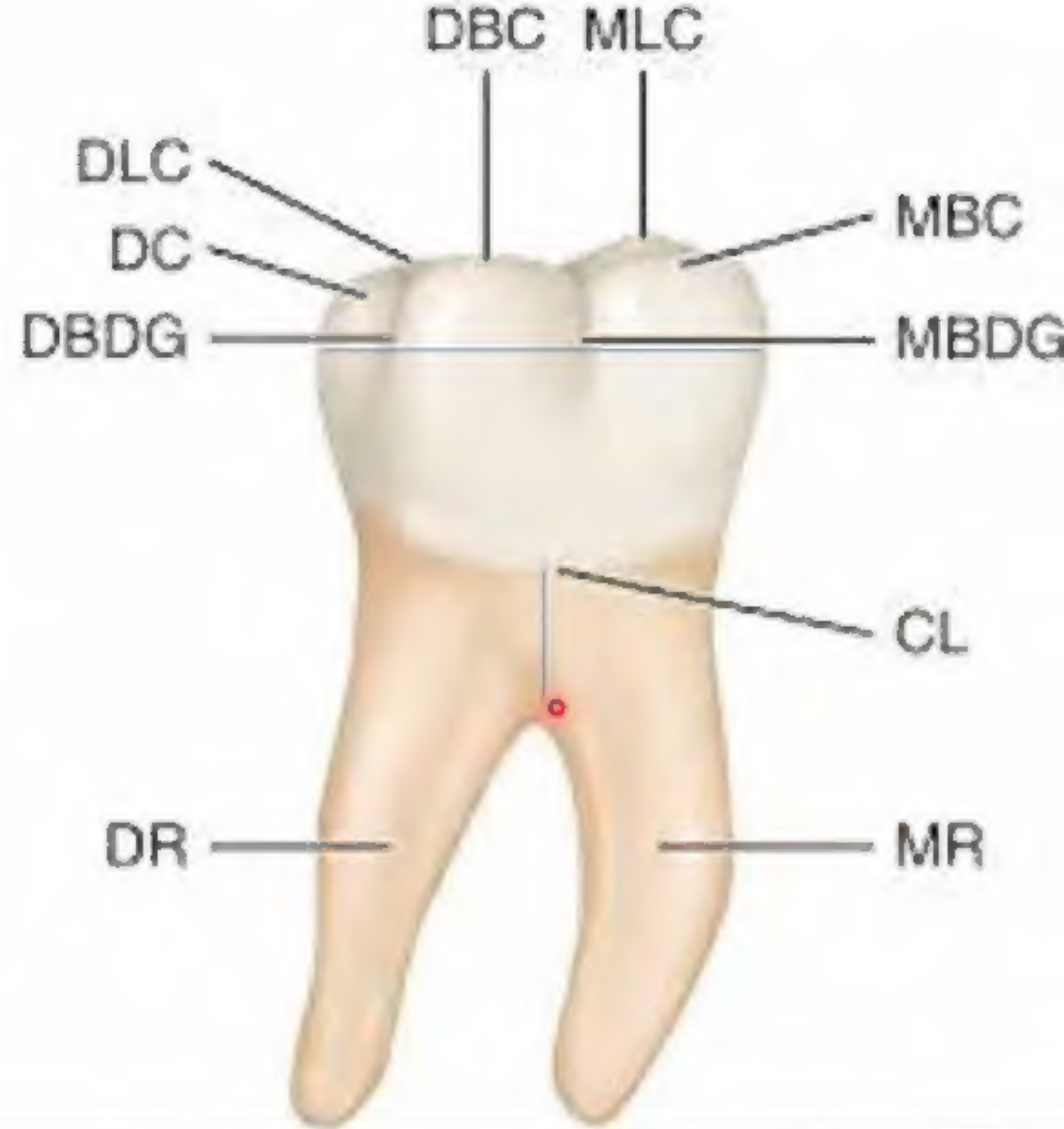


Buccal Aspect

6) The mesio-buccal cusp is slightly wider than the disto-buccal cusp, and they make together **80%** of the mesiodistal width of the crown, while the distal cusp makes the rest **20%**.

7) The buccal cusps are flat occlusally, while the distal cusp is rounded.

8) The bifurcation area is about **3mm** below the cervical line.



Lingual Aspect

1) From the lingual aspect, three cusps can be seen: the mesio-lingual cusp, the distolingual cusp and the lingual portion of the distal cusp.

The mesio-lingual cusp is the widest mesio-distally and has the highest cusp tip, while the distal cusp has the lowest cusp tip.

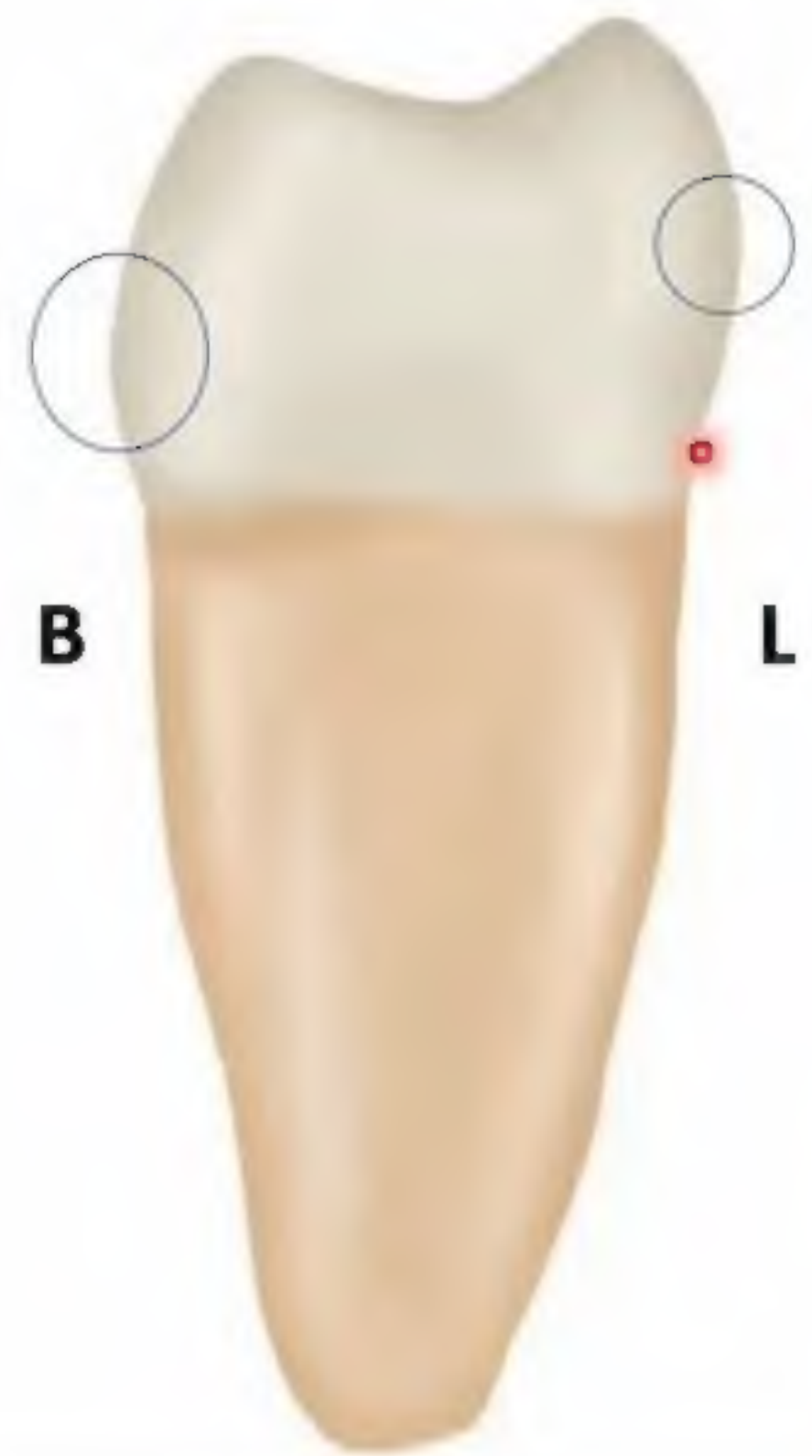
2) The two lingual cusps are **pointed** and form an obtuse angle at their cusps tips.

3) The lingual developmental groove extends downwards for about one third of the crown length, and it acts as a line of division between the two lingual cusps.



Mesial Aspect

- 1) The crown is **rhomboidal** with a **lingual tilt** of the buccal outline.
- 2) The buccal outline of the **crown** is convex from the cervical line up to the junction between the cervical and middle thirds forming the “**buccal cervical ridge**”, then the buccal outline straightens up to the buccal cusp tip.
- 3) The lingual outline is less convex, with the crest of curvature at the center of the middle third.

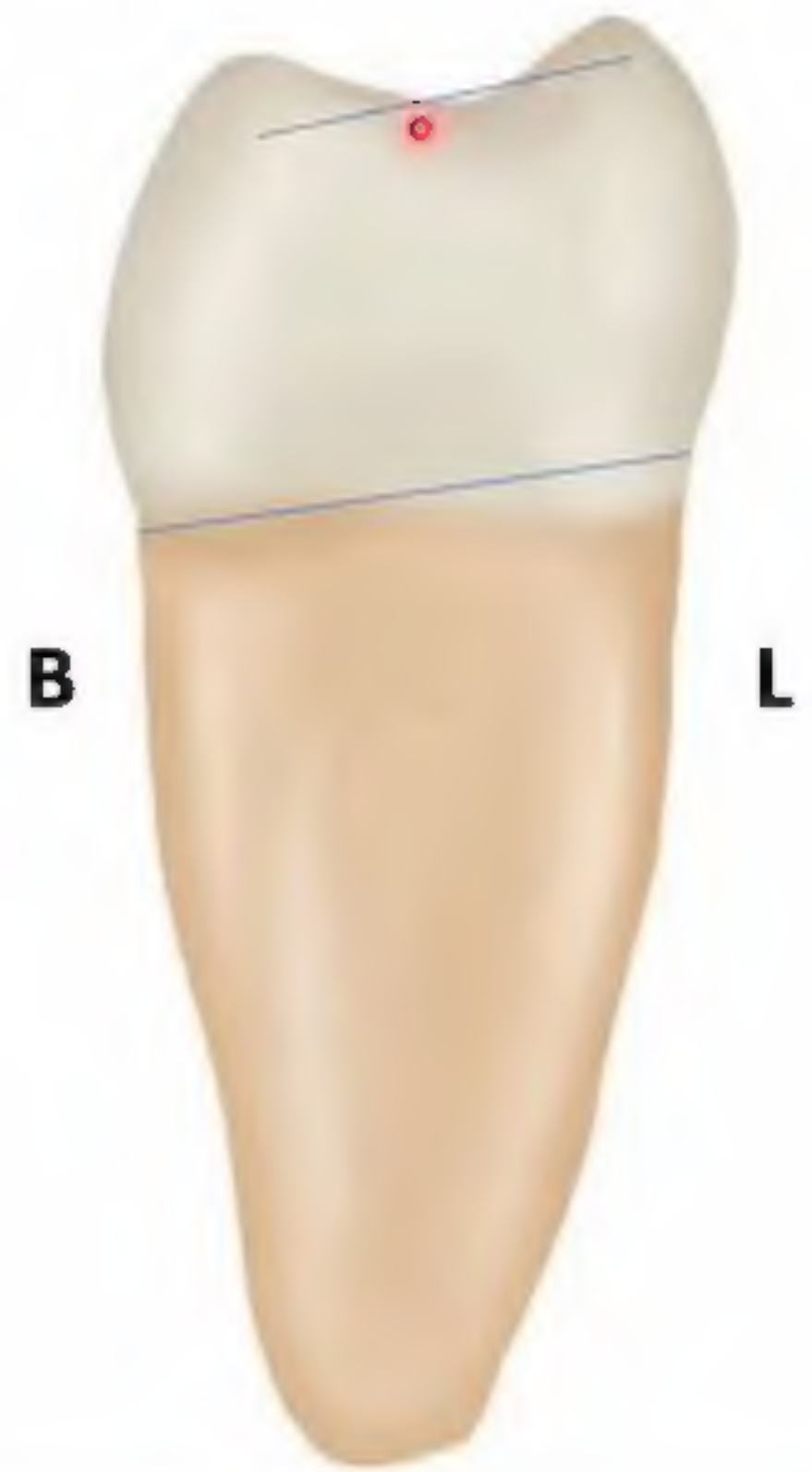


Mesial Aspect

4) The cervical line is irregular, and higher lingually than buccally.

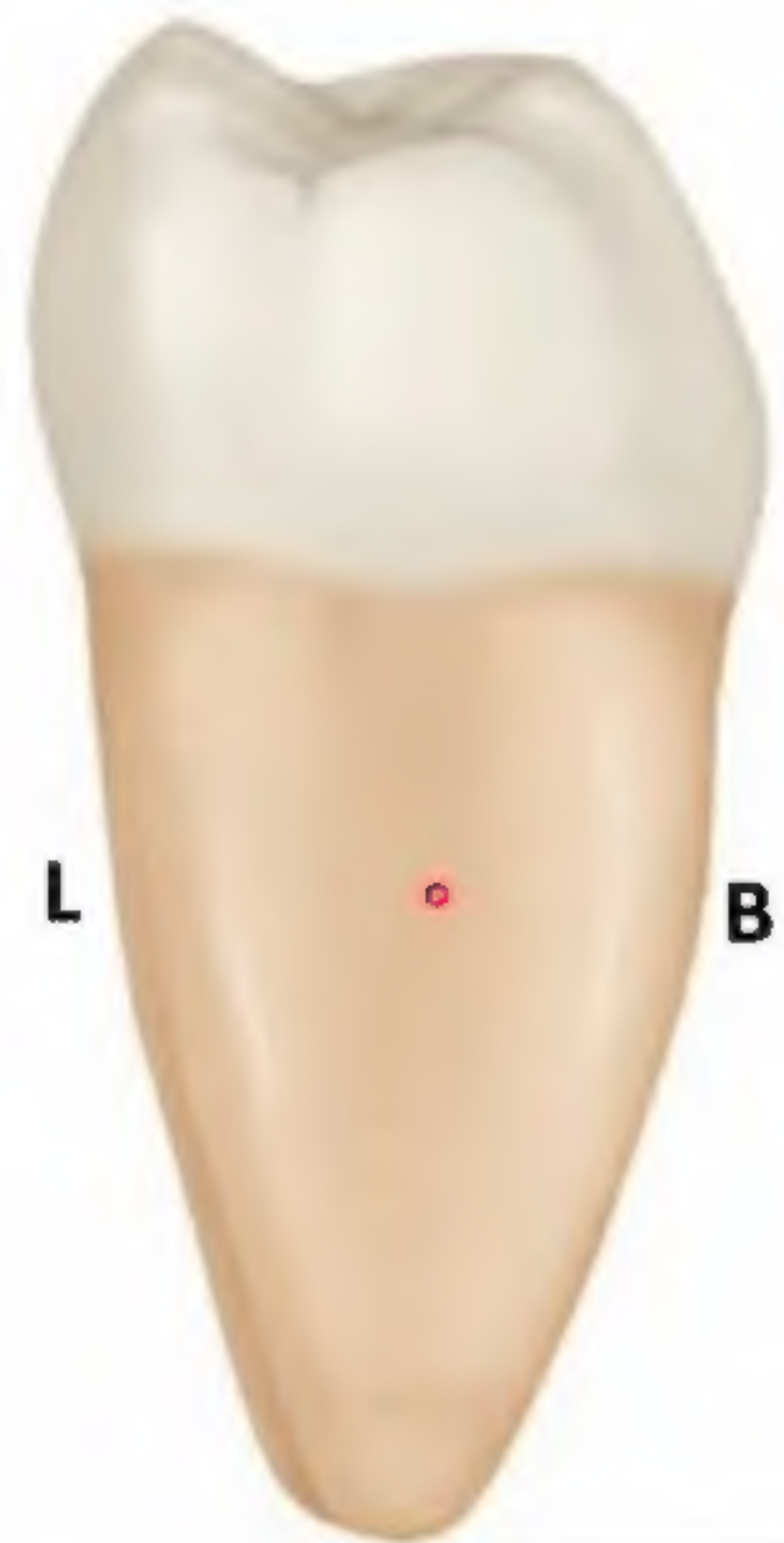
5) The buccal cusp is flat and the lingual cusp is sharp with greater cusp height.

6) The mesial marginal ridge is located about 1 mm below the level of the cusps tips.



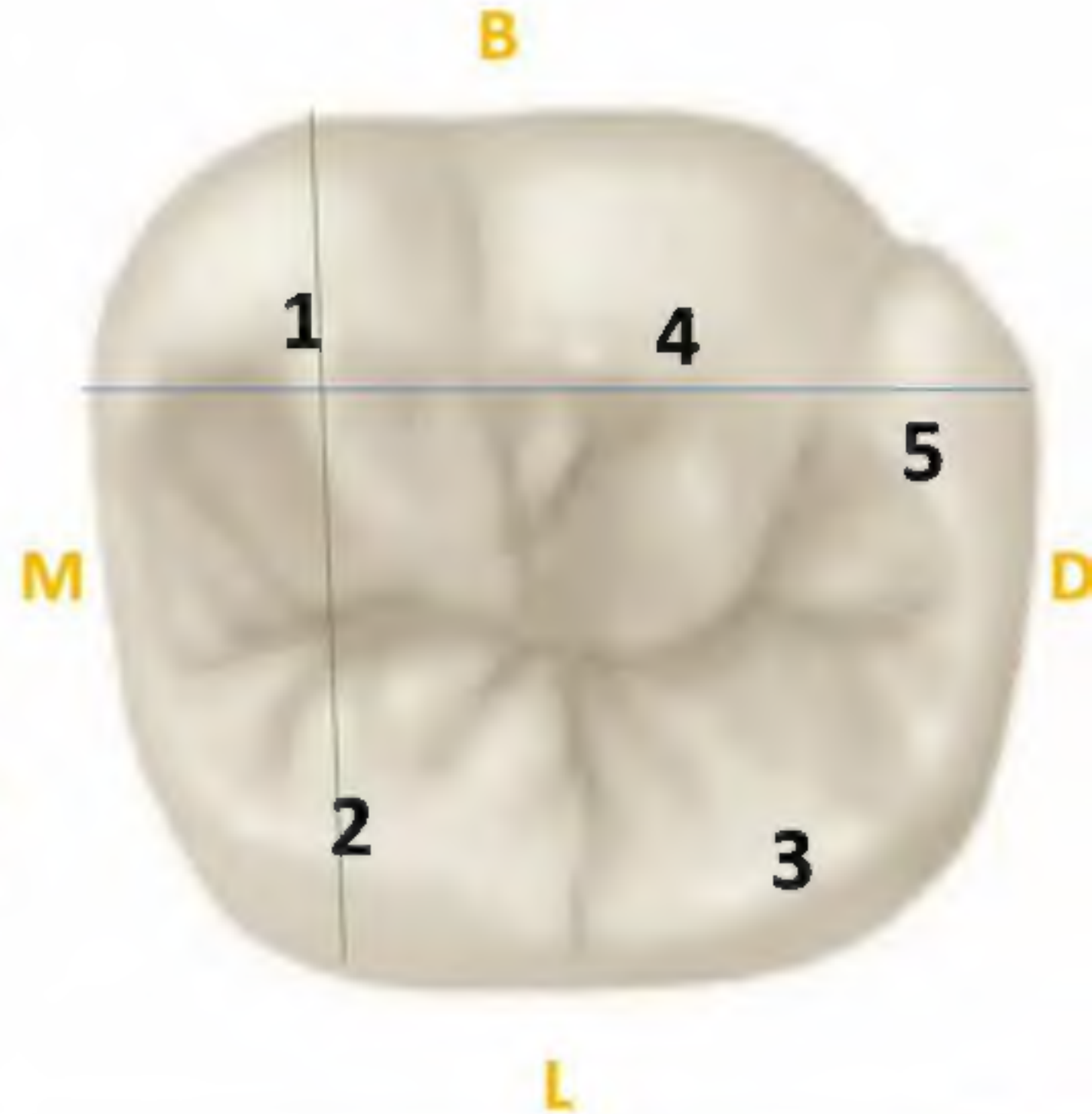
Distal Aspect (smaller)

- 1) The crown is **shorter** distally than mesially, so most of the occlusal surface can be seen from the distal aspect.
- 2) The **distal cusp** is located buccal to the center bucco-lingually.
- 3) The distal marginal ridge is short and curves cervically to form an obtuse angle.
- 4) The cervical line is irregular.
- 5) The distal root is narrower bucco-lingually than the mesial root.



Occlusal Aspect

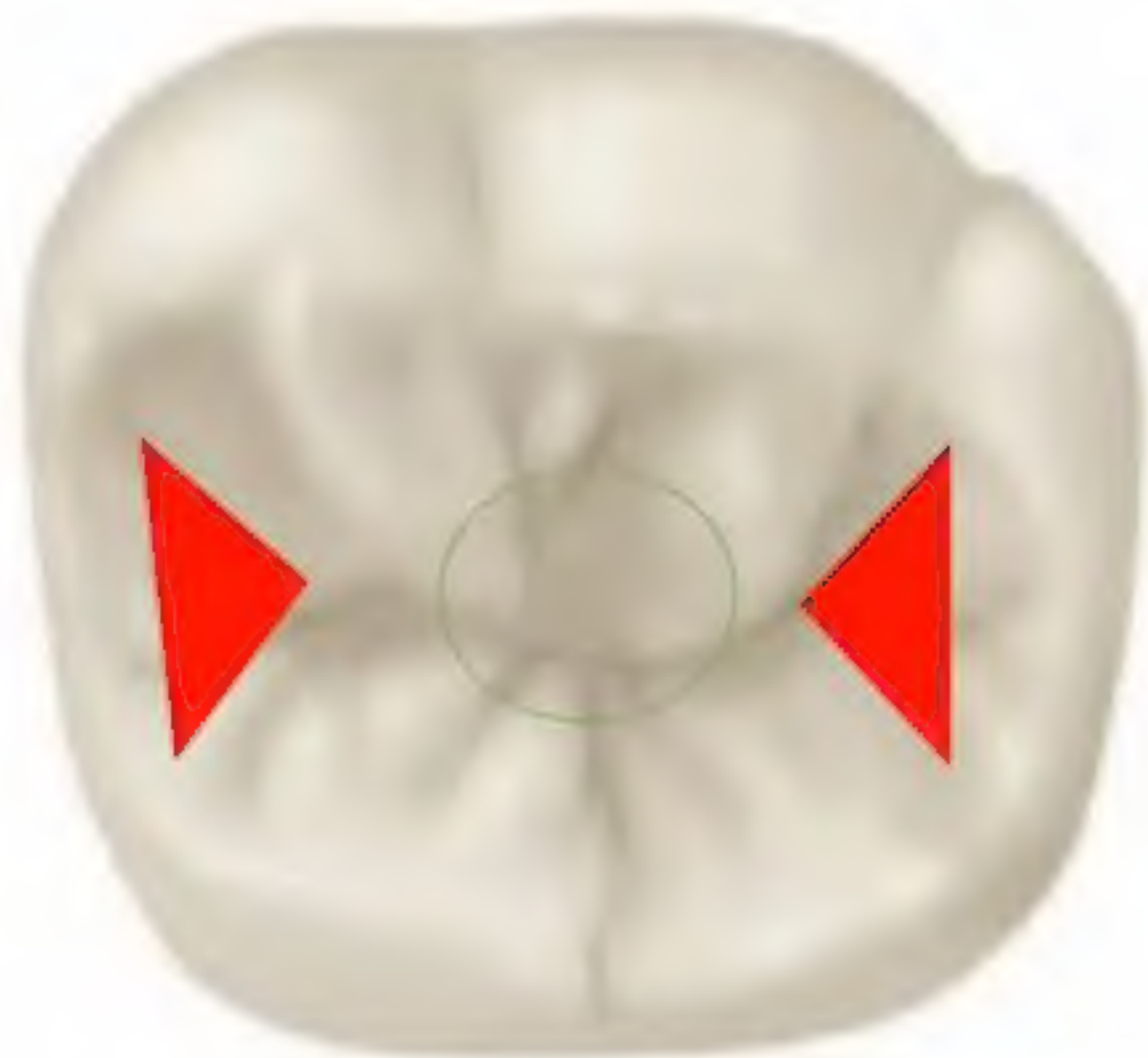
- 1) The occlusal outline is **rectangular in shape**, and it is larger mesio-distally than bucco-lingually by 1 mm.
- 2) The **bucco-lingual measurement** of the crown is greater on the mesial side than on the distal, and the **mesio-distal measurement** of the crown is greater on the buccal side than on the lingual.
- 3) There are five cusps: the **mesiobuccal cusp** (the largest), then the **mesiolingual** and the **distolingual cusps**, then the **distobuccal cusp**, and then the distal cusp (the smallest).
- 4) The distal contact area is located at the distal cusp.



5) There are three fossae; one major and two minor fossae:

(A) The major fossa is the **central fossa** which is roughly circular in shape, and is centrally placed on the occlusal surface. It is a concave area bounded by the distal slope of the mesio-buccal cusp, both mesial and distal slopes of the distobuccal cusp, the mesial slope of the distal cusp, the distal slope of the mesio-lingual cusp, and the mesial slope of the distolingual cusp.

(B) Minor fossae: (i) **Mesial triangular fossa**: located distal to the mesial marginal ridge.
(ii) **Distal triangular fossa**: located mesial to the distal marginal ridge.



6) There are four developmental grooves:

(A) Central developmental groove: passes from the central pit to the mesial and distal triangular fossae.

(B) Mesibuccal developmental groove: passes from the central pit to the buccal surface between the mesiobuccal and distobuccal cusps.

(C) Distobuccal developmental groove: passes from its junction with the central groove in a distobuccal direction separating the distobuccal and distal cusps.

(D) Lingual developmental groove: is an irregular groove passes lingually in between the cusps' ridges of the mesiolingual and distolingual cusps.

